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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,074	03/30/2004	Koji Shirakawa	Q80838	3020
23373	7590	03/07/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LEE, SIN J	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,074	SHIRAKAWA ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Due to new ground of rejection, finality of the last Office action is hereby withdrawn, and the following rejections are made non-final.

Claim Rejections - 35 USC § 102/103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

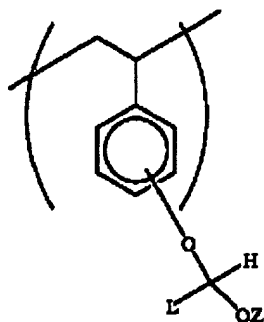
4. Claims 1-10, 13 and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nishiyama et al (US 6,537,718 B2).

Nishiyama teaches (see claims 1 and 3) a positive photoresist composition containing a photoacid generator and a resin, which is described in his claim 3 which is shown below.

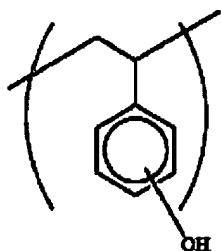
3. The positive photoresist composition for exposure to a far ultraviolet ray as claimed in claim 1, wherein the resin (B) contains a repeating unit represented by formula (IV) shown below and a repeating unit represented by formula (V) shown below:

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(iv)

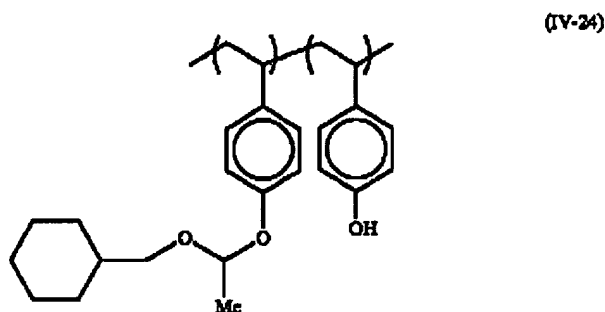
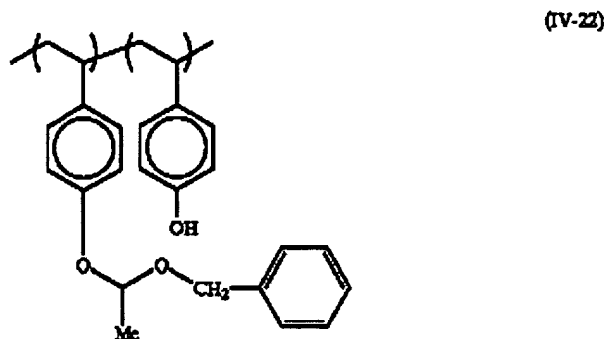


(v)



wherein L represents a hydrogen atom, a straight-chain, branched chain or cyclic alkyl group which may be substituted or an aralkyl group which may be substituted; Z represents a straight-chain, branched chain or cyclic alkyl group which may be substituted or an aralkyl group which may be substituted; or Z and L may be combined with each other to form a 5-membered or 6-membered ring.

Among the examples for such resin (B), Nishiyama discloses (see col.29) following two:



Both of these resins include preset acid-decomposable group (X) of claim 1. Since those two resins are clearly disclosed in the reference, it is the Examiner's position that one skilled in the art would immediately envisage using either of those resins as Nishiyama's resin (B). Nishiyama teaches (col.38, lines 5-12) that the wt. average Mw of his resin is preferably in a range of 2,000 to 300,000. Since the data point of 2,000 is clearly disclosed as the lower limit of the taught range (i.e., the data point of 2,000 is described with *sufficient specificity*) one skilled in the art would immediately envisage Nishiyama's resin (B) to have the Mw of 2,000, and thus, the prior art teaches present limitation as to the wt average molecular weight being not more than 5,000. As stated in In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), "the disclosure in the prior art of any value within a claimed range is an anticipation of that range." Nishiyama also teaches (col.24, lines 61-65) that the molar ratio of the repeating unit of the formula

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(IV) to the repeating unit of the formula (V) present in his resin is *more preferably* from 10/90 to 40/60, and thus, the prior art teaches present limitation as to the amount of the acid decomposable group being not more than 40% (the range of 10-40% as taught by Nishiyama meets the present limitation of "not more than 40%"). Nishiyama teaches the use of a organic basic compound in his composition (see col.39, lines 50-67) as well as the use of a surfactant (see col.39, lines 1-5). Nishiyama also teaches the solvent combination of propylene glycol monomethyl ether acetate and propylene glycol monomethyl ether in his claim 1. Nishiyama coats his photoresist composition onto a substrate, exposes the coated substrate to the exposure light such as X ray or an electron beam and then develops the exposed photoresist film to obtain a resist pattern (see col.42, lines 53-64). Therefore, Nishiyama teaches present inventions of claims 1-10, 13 and 14.

Alternatively, it would have been obvious to one skilled in the art to choose resin (IV-22) and (IV-24) as Nishiyama's resin (B) with a reasonable expectation of obtaining a positive photoresist composition, which is improved in line edge roughness and micro grain and is excellent in uniformity of coating on a substrate. Also, since Nishiyama's range (2,000 to 300,000) for the wt. average Mw of his resin overlaps with present range of "not more than 5,000, the prior art's range would have made present range prima facie obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Nishiyama also teaches (col.24, lines 61-65) that the

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molar ratio of the repeating unit of the formula (IV) to the repeating unit of the formula (V) present in his resin is *more preferably* from 10/90 to 40/60, and thus, the prior art's teaching meets present limitation as to the amount of the acid decomposable group being not more than 40%. Thus, Nishiyama's teaching renders obvious present inventions of claims 1-10, 13 and 14.

Allowable Subject Matter

5. Claims 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Nishiyama does not teach or suggest present Z group of claim 11 which has R5 substituent.

Response to Arguments

6. Applicants argue that those resins (IV-22) and (IV-24) of Nishiyama are not employed in the working Examples of Nishiyama. However, Nishiyama nonetheless clearly discloses (or names) those polymer species (IV-22) and (IV-24) in col.29, and thus it is still the Examiner's position that one skilled in the art would immediately be able to envisage using one of those resins as Nishiyama's resin (B).

Applicants argue that there is nothing in Nishiyama which discloses or suggests the quite narrow range of 5,000 or less called for in the present claims and that those working Examples of Nishiyama only teach the weight average molecular weights in excess of 5,000. Applicants also argue that a person of ordinary skill in the art would be more likely to employ a resin having Mw in the midpoint of the taught range, rather than a resin having a Mw at one or the other endpoints of that range. However, as discussed

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above, it is the Examiner's position that the data point of 2,000 (for the Mw) is described with *sufficient specificity* in Nishiyama that one skilled in the art would immediately be able to envisage Nishiyama's resin (B) to have the Mw of 2,000. Since Nishiyama teaches the data point of 2,000, the prior art teaches present limitation as to the wt average molecular weight being "not more than 5,000". As stated in In re Wertheim, supra, "the disclosure in the prior art of any value within a claimed range is an anticipation of that range."

Applicants argue that the claims of present application define both the weight average Mw and the "protection" rate in specific ranges, so that the positive resist composition of present invention provides or generates specific effects in terms of improvements in *in vacuo* PED in cases of drawing with an electron beam. However, looking the comparisons shown in present specification, Example 1 and Comparative Example 1 use different types of polymers, and different types of photoacid generators; Comparative Example 2 does not use component C and also uses different type of nitrogen-containing basic compound compared to Example 1; and Example 1 and Comparative Example 3 use different types of polymers, and also Comparative Example 3 does not use component C and uses different type of nitrogen-containing basic compound when compared to Example 1.

For those reasons stated above, present rejections over Nishiyama still stands.

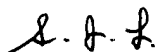
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333.

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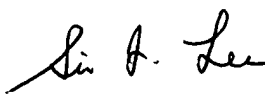
The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
March 2, 2006


SIN LEE
PRIMARY EXAMINER